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# SECTOR COMPETITIVENESS FRAMEWORKS ELECTRIC POWER EQUIPMENT AND SERVICES HIGHLIGHTS

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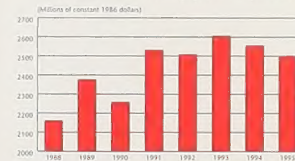
## HIGHLIGHTS

Vast quantities of falling water and a plentiful supply of coal and uranium have helped Canada become the sixth largest generator of electrical power in the world, the world's largest producer of hydro-electric power and among the top two or three largest per capita consumers and exporters of electricity. The immense energy requirements of large resource industries, along with the challenge of equipping long-distance transmission systems to serve a vast country and withstand severe climatic conditions, have developed the capabilities of manufacturers, consulting engineers, constructors and utility operators. Their technical know-how has also helped build electric power projects in over 70 countries around the world.

■ The manufacture of electric power equipment in Canada is carried on by more than 200 establishments, with approximately 85 percent of the activity located in Ontario and Quebec. The power industry is served in greater or lesser degree by 197 consulting engineering firms and engineering contractors.

■ In 1995, the manufacturers contributed 1 percent of manufacturing gross domestic product (GDP) and \$1.7 billion (measured in current dollars) in value-added to the Canadian economy. They accounted for \$3.2 billion in shipments, of which \$1.5 billion was exported. Equipment imports amounted to \$2.3 billion. In real terms, value-added for the manufacturers grew by 22 percent from 1988 to 1995.

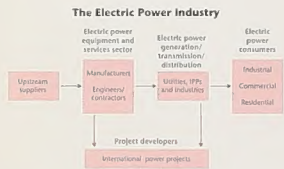
Canadian Electric Power Equipment Shipments



Source: Industry Canada estimates based on Statistics Canada data in BDO.

■ The sector as a whole, including consultancy and management services, in 1995 provided high-paying jobs for approximately 25 000 employees. Of these, about 17 400 were in electric power equipment manufacture and some 8 000 were in related services.

■ The equipment manufacturers and consulting engineers form part of the electric power industry, together with utilities and independent power producers that perform the primary functions of generation, transmission and distribution of electricity. The total industry employs over 113 000 people and contributes just under 5 percent of GDP. The 16 major power utilities across Canada account for 88 000 of these jobs.



## DISTINGUISHING CHARACTERISTICS

■ With one or two exceptions, the consulting engineering firms and engineering contractors in the sector are Canadian owned, but large multinationals based in Europe and the United States own almost all the big electric power equipment manufacturers in Canada. This is both an enabling and a constraining factor. The Canadian subsidiary can take advantage of

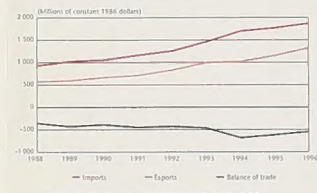
the contacts, sales force, access to capital and state-of-the-art technology of its parent, but is confined to activities determined by the parent and may not be permitted to pursue all the business opportunities to which it is suited.

■ The influence and role of Canadian subsidiaries within their respective multinational corporations are crucial to the development of the sector. Strategies for investment retention centre on winning and defending product mandates. Leading Canadian manufacturers have enjoyed considerable success in this respect, although this has not always preserved them from rationalization imposed from abroad.

■ Investment spending undertaken by producers of electric power has been the driving force shaping the sector and today constitutes its principal market. The sizable procurements of the 16 major utilities have created a substantial electric power infrastructure. This infrastructure is characterized by a high capital/labour ratio, considerable design content, integrated project planning and management, and a continuing requirement for equipment, servicing and rehabilitation.

■ Exports of electric power equipment increased by 102 percent in real terms between 1988 and 1995 and represented 46 percent of total 1995 shipments. The top export destinations of electric power equipment by rank are the United States, the Republic of Korea, the United Kingdom, Thailand, Venezuela, Taiwan and China.

Trade Performance



Source: Industry Canada estimates based on Statistics Canada data in BDO.

■ Exports to the United States accounted for 79 percent of total sector exports in 1995. Exports to Asia have also been growing strongly in contrast to exports to Europe, which have been declining.

■ Canada is a net importer of electric power equipment. Imports have increased in recent years, the bulk of this increase being imports from the U.S. The rapid growth of both exports



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and imports reflects the international specialization of the equipment industry.

- The provincial utilities take the leading role in research and development (R&D), working closely with equipment suppliers. Prospects for the flow of new technology have dimmed recently as utility R&D budgets have declined, government funding has been subject to fiscal constraints and little basic R&D has been undertaken.
- Emerging (mostly renewable) energy technologies such as solar, wind, biomass, fuel cells and photovoltaics provide electricity without contributing to the carbon dioxide emissions associated with fossil fuels. In the near future, these technologies are projected to play increasing roles, particularly in niche markets.

## MAJOR TRENDS

- According to 1995 figures compiled by Natural Resources Canada, electricity demand is expected to grow at an average of 1.4 percent a year between 1995 and 2010. This contrasts with annual average growth in electricity consumption, which was 6.6 percent from 1960 until the 1973–74 oil crisis and 3.2 percent for the period 1975–95. Since demand for equipment and services to a considerable extent is derived from demand for electricity, a similar flattening is anticipated in the sector's domestic business, at least in comparison with the situation in the early 1990s.
- After decades of rapid growth, equipment producers have been forced to concentrate on their most profitable products, shed unused capacity, and reduce prices and the range of products manufactured. The rationalization and consolidation of firms in the sector is part of a worldwide phenomenon, which has included a series of mega-mergers, and has been furthered in Canada by the lowering of North American trade barriers and the flattening of demand for

new facilities for power generation. There are indications that this phenomenon may not entirely have run its course.

- Anticipating a moderation in domestic demand and confronted by a potential surplus of plant capacity, the Canadian equipment and service providers have been concentrating their efforts on export markets. Demand for electric power in developing countries is increasing at more than 10 percent a year. There are many competitive strengths among sector participants, particularly the consulting engineers, who enjoy an outstanding record of success in export markets. Canadian companies do, however, face tough competition and market access barriers.
- In addition to providing the best technology at the best price, suppliers now must also bring financing to the table and be prepared to bear a significant portion of the project risk. In fact, financing has become a prerequisite to even being considered for participation in international consortia and is arguably the most critical determinant of export success.

- The electric power industry is undergoing a global transformation. Canadian utilities, traditionally the sector's primary market, are moving from a comparatively low-risk environment in which they have enjoyed the advantage of a fairly predictable future to an environment of competition at wholesale and probably retail levels in which they will experience much greater cost pressures and much shorter planning horizons. The strategies of their successor companies will emphasize staying lean and highly reactive to be able to respond to the needs of the electricity consumer.

- The business of the equipment and service suppliers will no longer be built on long-standing relationships with customers that permitted joint planning and the design of customized products, but on price, short lead times, flexibility of product offerings, standardized products, performance guarantees and strong support services. The sector will also be impacted by the strategic alliances, partnerships, and mergers and acquisitions being undertaken by the electric power industry in an effort to exploit synergies and minimize risks.

- Convergence between electricity companies and gas companies is already happening and may be extended to include other industries in related areas. The future of the electric power equipment and services sector in Canada may well depend on making the most strategic links with the companies that will emerge from the current process of restructuring to engage in the production and marketing of electricity and other energy services.

## THE BOTTOM LINE

- The sector's prospects should be assessed in both short- and long-run perspectives. In the short run, the export market offers an opportunity to apply the experience and expertise that has been garnered in the mainstream technologies of generating, transmitting and distributing electricity.
- If the sector can mobilize its resources effectively, it can sustain its already reduced capacity and work force for a decade or longer. A vibrant export market should not, however, be allowed to postpone adjustment to the restructuring of the electric power industry.

- It will be impossible to survive in the energy business of the next century unless the participants share in an expansive vision of its purpose and work with government and other stakeholders toward making that vision a reality. The vision should highlight the role of electricity in satisfying customer wants and achieving sustainable development and global prosperity.

For further information concerning the subject matter contained in these Highlights, please contact:

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